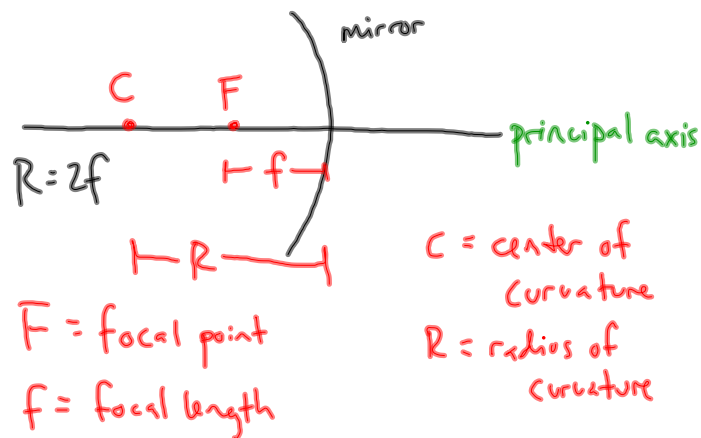


Test Wednesday, 12/14

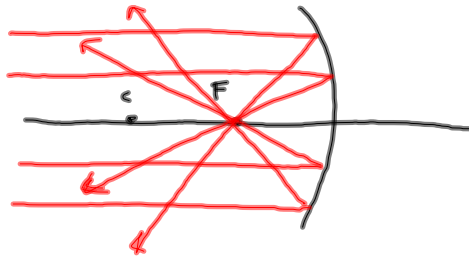
- Waves
- Sound
- Light

HW: p. 462: 1, 2, 3

Concave Mirrors:



1) Object infinitely far from mirror



2) Object is outside of C

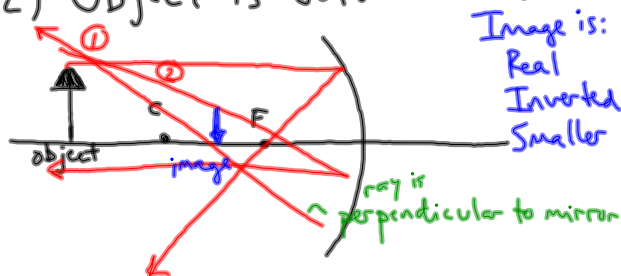


Image is:
Real
Inverted
Smaller

Rays: all originate at the top of object
1. parallel to the principal axis, through F
2. through F, parallel to principal axis
3. through C, back to top of object

Images are:

Either

Real

Upright

Larger

Or

Virtual

Inverted

Smaller (or) same size

Equations:

$$\frac{1}{d_o} + \frac{1}{d_i} = \frac{1}{f}$$

\hookrightarrow obj. distance \hookrightarrow image distance \hookrightarrow focal length

$$M = -\frac{d_i}{d_o} = \frac{h_o}{h_i}$$

\hookrightarrow magnification (no units)

If M is:

positive
negative

$$|M| > 1$$

$$|M| = 1$$

$$|M| < 1$$

Image is:

upright
inverted

larger

same size

smaller

For $\frac{1}{d_o} + \frac{1}{d_i} = \frac{1}{f}$ equation, we typically

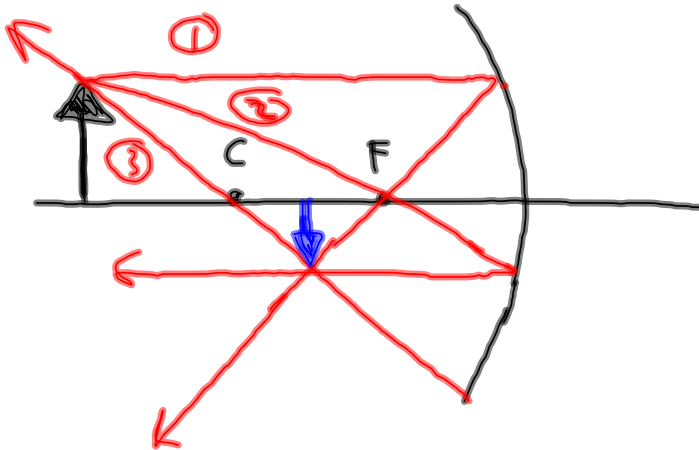
Solve for d_i .

If d_i is positive, real image formed.

" " " negative, virtual " "

Mirrors Notes and Practice Problems 4th Block 12.8.11

A concave spherical mirror has a focal length of 10.0 cm. Locate the image of a pencil that is placed upright 30.0 cm from the mirror. Find the magnification of the image. Draw a ray diagram to confirm your answer.



$$\frac{1}{d_o} + \frac{1}{d_i} = \frac{1}{f}$$

$$d_i = \left[\frac{1}{f} - \frac{1}{d_o} \right]^{-1}$$

$$= 15 \text{ cm}$$

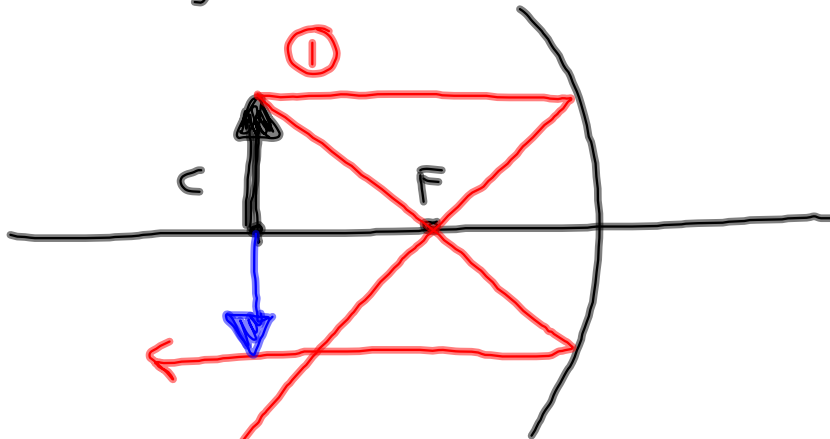
$$M = -\frac{d_i}{d_o}$$

$$= -\frac{15 \text{ cm}}{30 \text{ cm}}$$

$$= -0.5$$

The image is real, inverted, and smaller.

3) Object at C



* not a good drawing...

should be inverted, real, same size

4) Between C and F

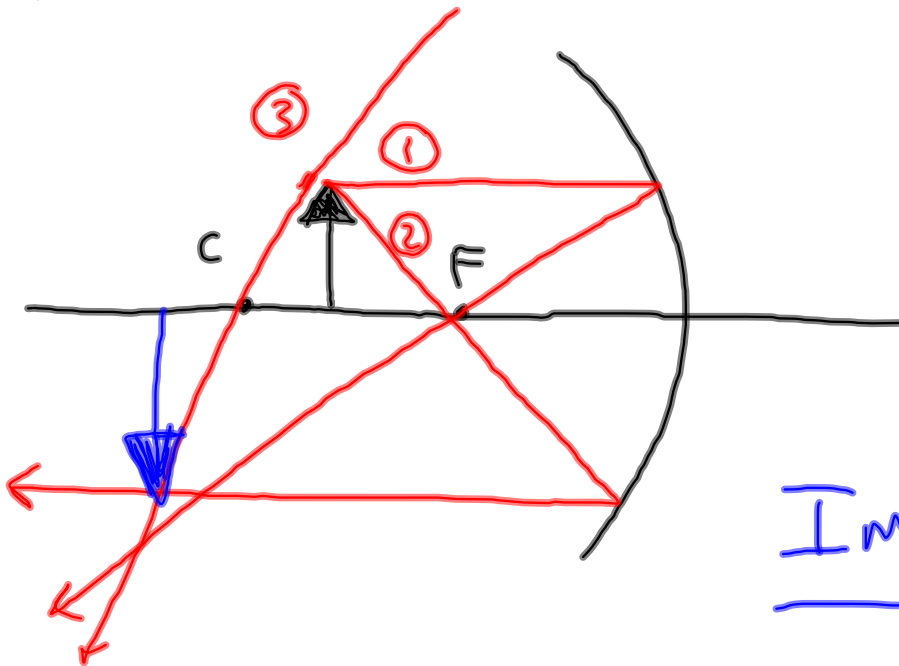
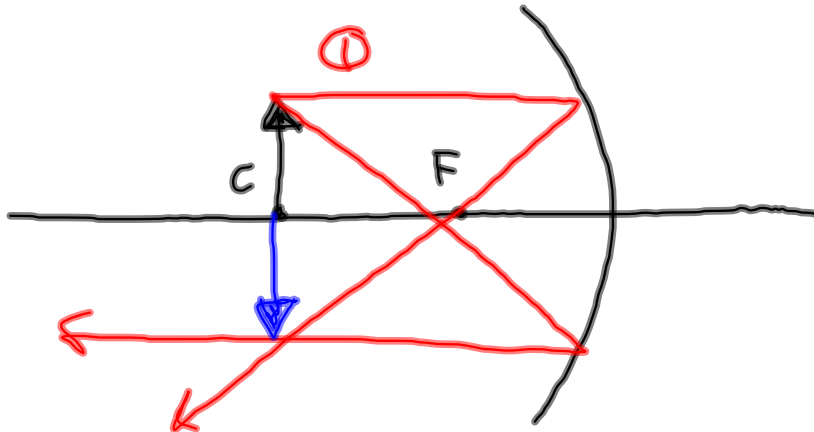


Image
real
inverted
larger

Mirrors Notes and Practice Problems 4th Block 12.8.11

A concave spherical mirror has a focal length of 10.0 cm. Locate the image of a pencil that is placed upright 20.0 cm from the mirror. Find the magnification of the image. Draw a ray diagram to confirm your answer.



$$\frac{1}{d_o} + \frac{1}{d_i} = \frac{1}{f}$$

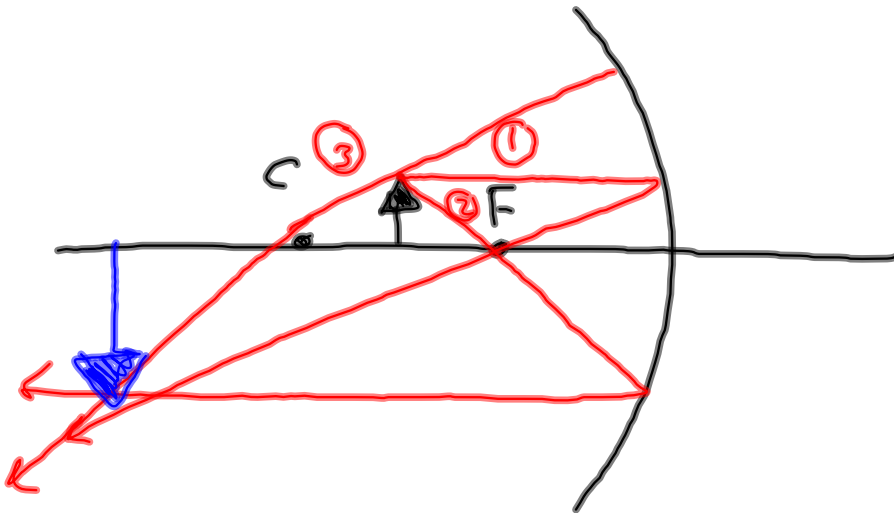
$$d_i = 20 \text{ cm}$$

$$M = -\frac{d_i}{d_o}$$
$$= -1$$

Image : same size, inverted, real

Mirrors Notes and Practice Problems 4th Block 12.8.11

A concave spherical mirror has a focal length of 10.0 cm. Locate the image of a pencil that is placed upright 15.0 cm from the mirror. Find the magnification of the image. Draw a ray diagram to confirm your answer.



$$\frac{1}{d_o} + \frac{1}{d_i} = \frac{1}{f}$$

$$d_i = 30 \text{ cm}$$

$$M = -\frac{d_i}{d_o}$$
$$= -2$$

Image is real, inverted, larger.